AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listing of claims in the above-referenced application:

Listing of the claims:

1. (Cancelled).
2. (Cancelled).
3. (Currently Amended) The microreactor system of claim [[2]] 116, wherein the ultrasonication means is an ultrasonication bath into which the microreactor or a portion thereof is emersed.
4. (Currently Amended) The microreactor system of claim [[2]] 116, wherein the ultrasonication means is an ultrasonication transducer that is attached to the microreactor.
5. (Cancelled).
6. (Cancelled).
7. (Previously Presented) The microreactor system of claim 116 wherein said aging section comprises at least one aging channel.
8. (Previously Presented) The microreactor system of claim 7 wherein the length of said at least one aging channel is in the range of between about 1 mm and about 100 cm.
9. (Previously Presented) The microreactor system of claim 7 wherein the width of said at least one aging channel is in the range of between about 10 μm and about 5000 μm.
10. (Previously Presented) The microreactor system of claim 7 wherein the depth of said at least one aging channel is in the range of between about 10 μm and about 2000 μm.
11. (Previously Presented) The microreactor system of claim 116 comprising a means for introducing a first reactant stream into said microreactor at a first inlet channel.
12. (Previously Presented) The microreactor system of claim 11 comprising a means for introducing a second reactant stream into said microreactor at a second inlet channel.
13. (Previously Presented) The microreactor system of claim 12 comprising a means for introducing a third reactant stream into said microreactor at a third inlet channel.

14. (Previously Presented) The microreactor system of claim 116 wherein more than one reactant stream are introduced into said microreactor through one inlet channel.

15. (Cancelled).

16. (Previously Presented) The microreactor system of claim 11 wherein said first reactant stream comprises alkoxide in alcohol.

17. (Previously Presented) The microreactor system of claim 12 wherein said second reactant stream comprises water in alcohol.

18. (Previously Presented) The microreactor system of claim 11 wherein said first reactant stream has a flow rate in the range of between about 0.1 mL/min and about 10 mL/min.

19. (Previously Presented) The microreactor system of claim 116 wherein said colloidal nanoparticles synthesized are Silica.

20. (Previously Presented) The microreactor system of claim 116 wherein the silica nanoparticles are prepared from a tetraethyl-orthosilicate precursor.

21. (Previously Presented) The microreactor system of claim 116 said colloidal nanoparticles synthesized are Titania.

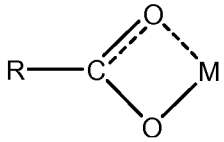
22. (Previously Presented) The microreactor system of claim 21 wherein the titania nanoparticles are prepared from a titanium tetraethoxide precursor.

23. (Previously Presented) The microreactor system of claim 21 wherein the titania nanoparticles are prepared from a titanium n-butoxide precursor.

24. (Previously Presented) The microreactor system of claim 116, wherein the colloidal nanoparticles synthesized are alumina.

25. (Previously Presented) The microreactor system of claim 116, wherein the colloidal nanoparticles synthesized are ceria.

26. (Previously Presented) The microreactor system of claim 116, wherein the colloidal nanoparticles are prepared from one or more compounds represented by the following structural formula:



wherein:

M is La, Sr, Mn, Fe, Co, Ce, Gd, Cu, or Ni; and

R is an alkyl, aryl or arylalkyl group.

27. (Previously Presented) The microreactor system of claim 116 wherein said colloidal nanoparticles have monodisperse size distributions.

28. (Previously Presented) The microreactor system of claim 116 wherein said colloidal nanoparticles have polydisperse size distributions.

29. (Previously Presented) The microreactor system of claim 116 wherein said colloidal nanoparticles have precisely defined polydisperse size distribution.

30. (Previously Presented) The microreactor system of claim 116 wherein said colloidal nanoparticles are charged.

31. (Cancelled).

32. (Cancelled).

33. (Previously Presented) The microreactor system of claim 116 further comprising a quench fluid inlet port downstream from said aging section and upstream from said at least one outlet channel.

34. (Previously Presented) The microreactor system of claim 119 wherein said quench fluid comprises an inert solvent.

35. (Previously Presented) The microreactor system of claim 119 wherein said quench fluid comprises alcohol.

36. (Previously Presented) The microreactor system of claim 119, comprising a means for introducing at least one reactant stream into said microreactor at said at least one inlet channel, and wherein said quench fluid inlet port is adapted to introduce said quench fluid into said microreactor at a flow rate equal to or greater than the flow rate of said at least one reactant stream.

37. (Previously Presented) The microreactor system of claim 33 wherein the introduction of said quench fluid into the microreactor stops the colloidal nanoparticle growth.

38.-115. (Cancelled).

116. (Currently Amended) A microreactor system, comprising:

~~at least one colloidal nanoparticle;~~

at least one inlet channel, wherein the width of said at least one inlet channel is in the range of between about 10 μm and about 5000 μm and the depth of said at least one inlet channel is in the range of between about 10 μm and about 2000 μm;

at least one inlet port for introducing a reactant into the at least one inlet channel;

at least one micromixing block positioned downstream from said at least one inlet channel, wherein said micromixing block comprises one or more channels, and wherein the width of said one or more channels is in the range of between about 1 μm and about 200 μm and the depth of said one or more channels are in the range of between about 10 μm and about 2000 μm, and further wherein the reactant forms at least one colloidal nanoparticle in the micromixing block;

an ageing section positioned downstream from said at least one micromixing block; ~~and~~

at least one outlet channel positioned downstream from said aging section that outputs the at least one colloidal nanoparticle, wherein said colloidal nanoparticle, inlet channel, micromixing block, aging section and outlet channel reside on one integrated substrate; and

further comprising an ultrasonication means.

117. (Previously Presented) The microreactor system of claim 12 wherein said second reactant stream has a flow rate in the range of between about 0.1 mL/min. and about 10 mL/min.

118. (Previously Presented) The microreactor system of claim 13 wherein said third reactant stream has a flow rate in the range of between about 0.1 mL/min. and about 10 mL/min.

119. (Previously Presented) The microreactor system of claim 33, comprising a means for introducing a quench fluid into said quench fluid inlet port.